Beth Bjorkman, Garner Cochran, Wei Gao and Lauren Keough*, lakeough@davidson.edu, and Rachel Kirsch, Mitch Phillipson, Danny Rorabaugh, Heather Smith and Jennifer Wise. The Combinatorics of RNA. Preliminary report.
Biologically, RNA is comprised of four nucleotides: adenine, guanine, uracil, and cytosine. We can model RNA by a string of the letters A, G, U, and C. RNA often folds on itself where A may bond with $U$ and $C$ may bond with G. Folding of RNA results in a plane tree with each side of each edge labeled. One can generalize this model of RNA by thinking about a finite set of letters and their complements. A string is folded around a plane tree in a way that each letter may only bond to its complement. We are interested in counting certain subsets of $S(n, m)$ where $S(n, m)$ is the collection of strings of length $2 n$ on an alphabet of $m$ letters and their complements. For example, we can count the number of strings that fold around a given plane tree or the number of strings that $k$-foldable (where a string is $k$-foldable if it folds around $k$ non-isomorphic plane trees). (Received February 22, 2016)

